VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

2005 FISH TISSUE AND SEDIMENT MONITORING PLAN
WATER QUALITY STANDARDS & BIOLOGICAL PROGRAMS

May 31, 2005

Introduction

The Virginia Department of Environmental Quality (DEQ), Water Quality Standards and Biological Monitoring Programs, Office of Water Quality Programs is responsible for the design and execution of the Statewide Fish Tissue and Sediment Monitoring Program. This document provides information concerning the proposed stations for monitoring fish tissue and sediment during 2005 and the rationale for the station selections.

Objective

The objective of the Statewide Fish Tissue and Sediment Monitoring Program is to systematically assess and evaluate, using a multi-tier screening, water bodies in Virginia in order to identify toxic contaminant(s) accumulation with the potential to adversely affect human users of the resource. A second objective of the program is to determine the presence of toxic chemical contaminants in the aquatic environment which have the potential to adversely affect the aquatic biological community. Data collected will be used to quantify human health risks and ecological/environmental health conditions. In addition, follow-up studies are conducted when problems are found and/or when recommended by the Virginia Department of Health (VDH) through a Memorandum of Agreement between VDH and DEQ. VDH uses data generated by this program to assess the need for issuing or modifying fish consumption advisories. The DEQ employs the data to assess water quality for 305(b) Report /303(d) Listing and Total Maximum Daily Load (TMDL) determinations.

Sampling Design

The water bodies of Virginia are separated into fourteen river basins or subbasins (see Table 1). In the past, fish tissue and sediment were sampled in all fourteen of the river basins within a five-year cycle following procedures stated in the DEQ Quality Assurance/Quality Control Project Plan for the Fish Tissue and Sediment Monitoring Program (1998). In April 2000, the General Assembly amended section 62.1-44.19:5 of the code of Virginia which instructed the DEQ to sample all of the river basins within a three-year rotational cycle contingent upon available funding. Between 2001 and 2003 a three year rotation was employed, but due to funding cuts

and staff reductions after 2003, the program has reverted back to the original five year cycle.

Table 1. River Basins in Virginia	Basin Code
1) Potomac River Subbasin	1A
2) Potomac River-Shenandoah River Subbasin	1B
3) James River	2-
4) Rappahannock River	3-
5) Roanoke River	4A
6) Yadkin River	4B
7) Chowan-Chowan River Subbasin	5A
8) Chowan-Albemarle Sound Subbasin	5B
9) Tennessee and Big Sandy River-Big Sandy Subbasin	6A
10) Tennessee and Big Sandy River-Clinch Subbasin	6B
11) Tennessee and Big Sandy River-Holston Subbasin	6C
12) Chesapeake Bay, Atlantic Ocean, and Small Coastal	7-
13) York River	8-
14) New River	9-

Two river basins have been selected for the 2005 routine sampling season: the James River Basin (last sampled in rotation 2001), and the Potomac - Shenandoah River Subbasin (last sampled in rotation in 2001). In addition to the “routine” sampling stations located in the James and Potomac River –Shenandoah River Basins, the sample station list includes five special request stations (see table 3). One special request station is located at Fort A.P. Hill in the York River Basin, and one is located at Accotink Creek Potomoc Basin, and three are located in the Holston River Basin in Southwest Virginia. A total of 94 fish tissue and sediment sampling stations have been selected. The sampling stations list includes the routine monitoring stations and special request. All of the sampling sites are ranked from 1 to 2 with 1 being the high priority and 2 the low priority. A higher rank is based on known or potential water quality problems at the sampling location, special requests by other DEQ units, VDH or citizen groups, and/or if the sampling location is a relatively intensive resource for recreational or commercial fishing. Extensive effort will be made to complete all of the stations selected, but if equipment problems and/or

severe weather impact(s) the sampling schedule, or if there are unanticipated budget reductions or staff limitations, priority will be given to higher ranked stations.

Most of the sampling sites are freshwater; however, several are brackish or saltwater locations. The samples that will be collected at each freshwater station include one sediment sample and three to five tissue composite samples (5-10 individuals of the same species per composites) consisting of fish species that are typically consumed by humans. Samples will include at least one bottom feeder (e.g. catfish sp.), which may be highly exposed to chemically contaminated sediments compared to other species, and two to four upper and middle trophic level feeders (e.g. bass and sunfish species, respectively.), which may be exposed to chemical contaminants via biomagnification.

Collection of targeted species for tissue analysis at the brackish and saltwater sites may be problematic since only 10-15% of the fish and shellfish species at the stations are year-round residents and few of the resident species are typically consumed by humans (Murdy et. al. 1997). It is likely that sample collection techniques will yield several species of migratory fish and shellfish that are consumed by humans and a few resident fish species that are not consumed by humans. Contaminants found in migratory fishes may not reflect local pollution problems but may be used to calculate human health risks from consumption. Contaminants found in sediment and resident fishes may be used to identify local inputs of bioaccumulative contaminants. Therefore, the samples that will be collected at each brackish or saltwater station include one sediment sample and three to five composite samples (5-10 individuals of the same species per composite) consisting of an edible migratory, an edible or non-edible resident, and an edible or non-edible bottom species. For a detailed list of species that will be targeted at each brackish or saltwater station (see Table 2).

The entire data set should help determine if any unacceptable human health risks are associated with fish consumption, and if local inputs of bioaccumulative contaminants are in tissue and/or sediment at levels of concern. Samples collected will be analyzed for metal and/or organic contaminants by the College of William and Mary-Virginia Institute of Marine Science.

Station Selection Criteria

The stations in each basin have been selected to produce site specific conclusions and provide spatial coverage of the entire basin. The following criteria were used to select the 2005 sampling stations:

- Historical Data Review
- Spatial Distribution
- Specific Water Quality Problems
- Major Tributary Status
- External Request from other VADEQ offices, State Agencies, and Citizen Groups
- Point Source
- Nonpoint Source
- Major Fishery

The attached references were used in selecting the sampling stations. The water body ID number, station number, priority rank, river mile, latitude, longitude, county, criteria for selection, and corresponding USGS topographical survey map name for each proposed sampling station are provided (see table 3). Summary maps showing the location of all of the proposed sampling stations are attached (see figure1-4).

Sample Collection and Reporting

Fish tissue and sediment samples will be collected in the early spring through late fall, 2005. Analytical data for all of the samples should be

received from the laboratory by June 2006. The data will be tabulated as received and sent to VDH per an October 2000 Memorandum of Agreement between the VDH and DEQ. VDH will make an evaluation regarding potential human health impacts due to contaminated fish consumption and issue fish consumption advisories or bans as needed. DEQ will assess the data in the next 305(b) assessment cycle.

The tabulated data will also be sent to the water quality monitoring managers for 305(B) reporting and review and posted on the DEQ web site at: www.deq.virginia.gov/fishtissue/

Table 2. Target species at each of the brackish water or saltwater stations.

Migratory Fish (Normally consumed by humans)	Resident Fish (Some may not be consumed by humans)	Benthic Fish/Shellfish (Some may not be consumed by humans)
Striped Bass	White Perch	Oyster spp.
Spot	Yellow Perch	Clam spp.
Atlantic Croaker	Killifish, Banded	Blue Crab
Weak Fish	Killifish, Striped	Summer Flounder
Black Sea Bass	Killifish,Rainwater	Smallmouth Flounder
Spotted Seatrout	Killifish, Marsh	Oyster Toadfish
Black Drum	Killifish, Spotfin	Hogchoker
Red Drum	Mummichogs	Tongue Fish
Silver Perch	Sheepshead Minnow	Channel Catfish
Northern Kingfish	Silverside, Inland	White Catfish
Southern Kingfish	Silverside, Rough	
Gulf Kingfish	Silverside, Atlantic	
Bluefish	Bay Anchovy	

Table 3. 2005 Fish Tissue and Sediment Monitoring Stations

WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
POTOMAC RIVER BASIN									
N-A15E	1	1	1AACO001.78	Accotink Creek near Fort Belvoir	N38° 41.231'	W77° 09.589'	Fort Belvoir	Fairfax County	Special Request Waste Division
SHENANDOAH RIVER BASIN									
V-B26R	2	1	1BBLK003.86	Blacks Run Rt. 679 bridge	N38° 24.129'	W78° 54.009'	Bridgewater	Harrisonburg	01 Hg, chlordane, DDT, DDD, DDE, and PCB, above ER-M, Pb, Cu, & numerous PAHs above ER-L in sediment. Hg in fish and sediment Tingler Bull 583, 1990,p.M3-22
V-B53R	3	2	1BCDR013.32	Cedar Creek Rt. 628 bridge	N39° 04.658'	W78° 19.537'	Middleton	Frederick	01 DDT above ER-L in sediment, DDE,PCB in fish and sediment, Tingler Bull 583, 1990,p.O3-10,O4-16
V-B14R	4	1	1BCST012.32	Christians Creek	N38° 07.716'	W78° 59.670'	Fort Defiance	Augusta	01 DDT above ER-M in sediment, Hg in fish and sediment, Tingler Bull 583, 1990,p.M3-24
V-B39R	5	2	1BHKS004.43	Hawksbill Creek	N38° 41.222'	W78° 27.327'	Luray	Page	01 Various PAHs, Total Chlordane, DDT, above ER-L , Multiple dischargers including tannery discharge, 1975 305B Report p. 63, p. 80, 1996 305B

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WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
V-B12R	6	1	1BLEW005.24	Lewis Creek, Eastern Staunton	N38° 09.250'	W79° 02.462'	Staunton	Staunton	01 PCB SV exceeded for White Sucker and Bluehead Chub, '01 Hg and various PAHs PCB, Chlordane, DDT above ER-M, Pb, Cu, and various PAHs, DDE, DDD, & DDT above ER-L in sediment. Urban, Hg Tingler Bull 583, 1990,p.M3-24
V-B51R	7	1	1BNFS000.57	North Fork Shenandoah Rive near DGIF Boat Launch downstream of Rt. 340 bridge	N38° 56.941'	W78° 11.864'	Front Royal	Warren	96 Carp and Largemouth Bass exceed SV for PCB PAHs elevated in Carp, DDT above ER-L in Sediment
V-B50R	8	1	1BNFS054.75	North Fork Shenadoah River near Willow Grove at DGIF Boat Ramp	N38° 50.750'	W78° 31.733'	Edinburg	Shenandoah	Spatial Distribution
V-B54R	9	1	1BNFS093.53	North Fork Shenandoah Rive near Cootes Store	N38° 38.248'	W78° 51.132'	Timberville	Rockingham	96 Metals Pb in Rock Bass
V-B23R	10		1BNTH004.10	North River near Rt. 668	N38° 16.917'	W78° 51.083'	Grottoes	Rockingham	VRO Mercury Study
V-B54R	11	2	1BPSG001.36	Passage Creek Rt. 55 bridge	N38° 57.533'	W78° 16.000'	Strasburg	Warren	Spatial Distribution
V-B57R	12	1	1BSHN028.15	Shenandoah River near Rt. 7	N39° 06.046'	W77° 57.904'	Ashby Gap	Clarke	99 PCB SV greatly exceeded for Channel Catfish, '96 Total Chlordane above ER-L ~ 3 Mile downstream of this site.

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WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
V-B57R	13	1	1BSHN038.27	Shenandoah River near Rt. 50	N39° 02.481'	W77° 59.948'	Ashby Gap	Clarke	99 & '96 PCB SV exceeded for multiple sp.'96 Pb in Rock Bass, '96 Sum DDT, Total DDT above ER-L, '97 Sum DDT above ER-L in sediment
V-B57R	14	2	1BSHN053.63	Shenandoah River	N38° 57.797'	W78° 10.760'	Front Royal	Warren	96 PCB above ER-L in sediment
V-B41R	15	1	1BSSF000.19	South Fork Shenandoah River near Riverton	N38° 56.628'	W78° 11.430'	Front Royal	Warren	01 & '99 PCB SV exceeded for multiple sp., Hg above ER-M, Cu above ER-L, '9 PCB above SV for multiple sp. (very high in Carp).
V-B38R	16	1	1BSSF054.20	South Fork Shenandoah River near Whitehouse Landing	N38° 38.760'	W78° 32.129'	Hamburg	Page	VRO Mercury Study
V-B37R	17	1	1BSSF063.17	South Fork Shenandoah River near Newport	N38° 34.580'	W78° 35.510'	Stanley	Page	VRO Mercury Study
V -B37R	18	1	1BSSF078.24	South Fork Shenandoah River near Shenandoah	N38° 28.950'	W78° 37.667'	Elkton West	Page	VRO Mercury Study
V-B33R	19	1	1BSSF100.10	South Fork Shenandoah River near Lynwood	N38° 18.738'	W78° 46.262'	Grottoes	Rockingham	VRO Mercury Study
V-B32R	20	1	1BSTH000.19	South River near Rt. 659 at Port Republic	N38° 17.666'	W78° 48.618'	Grottoes	Port Republic	96 Cd in Sucker sp.
V-B32R	21	1	1BSTH026.12	South River near Ridgeview Park	N38° 03.867'	W78° 54.433'	Waynesboro West	Augusta	VRO Mercury Study
V-B32R	22	1	1BSTH004.21	South River near Grottoes	N38° 17.033'	W78° 50.067'	Grottoes	Augusta	VRO Mercury Study
V-B32R	23	1	1BSTH014.49	South River near Crimora	N38° 09.367'	W78° 51.287'	Crimora	Augusta	VRO Mercury Study
V-B32R	24	1	1BSTH020.44	South River near Dooms	N38° 06.450'	W78° 51.750'	Waynesboro East	Augusta	VRO Mercury Study

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WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
V-B32R	25	1	1BSTH022.75	South River near Hopeman Parkway	N38° 04.982'	W78° 52.392'	Waynesboro West	Waynesboro	VRO Mercury Study
V-B32R	26	1	1BSTH023.73	South River near 2nd Street	N38° 04.733'	W78° 52.567'	Waynesboro West	Waynesboro	VRO Mercury Study
V-B32R	27	1	1BSTH025.10	South River near DuPont Footbridge	N38° 03.705'	W78° 53.153'	Waynesboro West	Waynesboro	VRO Mercury Study
V-B56R	28	1	1BSTV002.92	Stephens Creek near Rt. 636	N39° 02.725'	W78° 11.338'	Stephens City	Frederick	01 DDT exceed ER-M in sediment
V-B12R	29	1	1BXXX.000.18	Lake Tam (X Trib to Lewis Creek)	N38° 09.503'	W79° 04.992'	Staunton	Staunton	Request from Town of Staunton
V -B26R	30	2	1BXXX.000.66	Newman Pond at JMU (X Trib to Blacks Run)	N38° 29.953'	W78° 52.507'	Bridgewater	Harrisonburg	Hg detected in Fish Samples
JAMES RIVER BASIN									
P-J15E	31	1	2-APP001.53	Appomattox River near Hopewell Yacht Club Rt. 10	N37° 18.711'	W77° 17.806'	Hopewell	Hopewell City	95 lead in carp & PCB above SV for multiple fish spp., '95 lead & PAHs & halogenated compounds elevated in sediment, 2001 PAHs and halogenated compounds elevated in sediment. As, Hg, Pb, PCB in fish and sediment Tingler Bull 583, 1990, p.M1-19, I-13, M3-17, M4-19, I-14, O4-12.
P-J14L	32	1	2-APP028.58	Appomattox River at Lake Chesdin	N37° 15.850'	W77° 38.566'	Winterpock	Dinwiddie	Major Fishery-last sample '01No Major Problems
P-J07R	33	1	2-APP061.02	Appomatox River at Genito Road	N37° 27.392'	W77° 51.995'	Clayville	Powhatan	Spatial Distribution
P-J01L	34	2	2-APP118.04	Appomatox River near Farmville	N37° 20.067'	W78° 28.057'	Farmville	Prince Edward	Spatial Distribution
P-J01R	35	2	2-APP143.57	Appomatox River near Rt. 618	N37° 20.350'	W78° 39.567'	Pamplin	Appomattox	Spatial Distribution
W-H03R	36	1	2-BKW007.19	Blackwater Creek (College Lake) near Rt. 221 bridge	N37° 24.096'	W79° 11.039'	Lynchburg	Lynchburg City	SCRO Request

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WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
P-G03E	37	1	2-BLY000.65	Bailey Creek near Rt. 10 bridge	N37° 17.290'	W77° 15.558'	Hopewell	Hopewell City	01 PCB exceed ER-M & Chlordane, DDE, DDD, DDT exceed ER-L in sediment. Observation of elevated levels of sames componds in '98 0.1 miles upstream. '01, '97 and '01 PCB exceed SV for multiple fish sp. PCB, Hg, Cu in sediment Tingler Bull 583, 1990,p.M6-23,M3-30,O4-10.
P-J05L	38	2	2-BRI010.58	Briery Creek Reservoir	N37° 12.233'	W78° 26.533'	Hampden Sydney	Prince Edward	Major Fishery, Spatial Distribution
P-G08E	39	2	2-CHK002.17	Chickahominy River near Rt. 5	N37° 15.806'	W76° 52.625'	Brandon	James City	Spatial Distribution, Kepone Monitoring Station
P-G08E	40	1	2-CHK023.64	Chickahominy River near Chickahominy Shores (Below Walkers Dam)	N37° 24.081'	W76° 56.222'	Walkers	Charles City	01 Hg elevated in sediment, '01 PCB exceed SV for multiple fish sp. Major Fishery DGIF Freshwater Fishing Guide 2001 p.5.
P-G06R	41	2	2-CHK029.18	Chickahominy River near Rt. 106 (Above Walkers Dam)	N37° 24.870'	W77° 00.227'	Roxbury	New Kent	95 As, Cu elevated in sediment, '96 DDT elevetd in sediment
P-G06R	42	2	2-CHK055.04	Chickahominy near Rt. 156 bridge	N37° 33.117'	W77° 16.283'	Seven Pines	Henrico	Spatial Distribution
P-G05R	43	2	2-CHK083.14	Chickahominy River near Rt. 624 bridge	N37° 41.717'	W77° 35.567'	Glen Allen	Henrico	Spatial Distribution
P-J15E	44	2	2-CTC000.02	Cattail Creek	N37° 16.850'	W77° 16.750'	Hopewell	Hopewell City	97 PCB, chlordane, DDE, DDD, DDT elevated in sediment.
V-I17R	45	1	2-CWP002.55	Cowpasture River near Rt. 633	N37° 47.509'	W79° 45.538'	Clifton Forge	Alleghany	01 PCB in Redbreast Sunfish well above SV. As in sediment Tingler Bull 583, 1990, p.M1-20.
P-G03E	46	2	2-DCD007.54	Diascund Creek Reservoir	N37° 26.000'	W76° 55.433'	Walkers	New Kent	Spatial Distribution

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WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
T-G15E	47	1	2-DEC000.54	Deep Creek near I-64	N36° 45.758'	W76° 18.482'	Norfolk South	Chesapeake City	98 Hg, PAH, PCB elevated in sediment, 2001 PAH elevated in sediment.'98 & '01 PCB above SV for multiple fish sp.
T-G15E	48	1	2-EBE001.20	Eastern Branch Elizabeth River	N36° 50.214'	W76° 15.950'	Norfolk South	Chesapeake City	01 Hg, Zn, Cu, Pb elevated in Sediment, 01 PAH PCB, DDE, DDD, DDT, Total Chlordane elevated in sediment.'93 &'01 PCB above SV for multiple fish sp.
P-G01E	49	1	2-FAC003.85	Falling Creek Reservoir near Dam	N37° 27.739'	W77° 27.929'	Drewrys Bluff	Chesterfield	03 Largemouth Bass Hg above SV
P-J01R	50	2	2-HOL001.05	Holiday Lake	N37° 23.495'	W78° 38.160'	Holiday Lake	Buckingham	Spatial Distribution
P-G03E	51	2	2-GRV000.57	Gravelly Run	N37° 17.867'	W77° 15.800'	Hopewell	Hopewell City	97 PCB, DDT, elevated in sediment Cd,Cu, DDE, DDT, Tingler Bull 583, 1990,p.M1-20 Warm Water Outfall Stream. No Fish Sediment Only
W-H04R	52	2	2-HAZ007.16	Harris Creek near Rt. 130	N37° 29.097'	W79° 09.925'	Lynchburg	Amherst	01 Se elevated in Sediment Hg detected in fish, Cd,Cu, DDE, DDT in fish and sediment Tingler Bull 583, 1990,p.M1-20
P-G03E	53	2	2-HEC006.22	Harrison Lake (Herring Creek)	N37° 20.797'	W77° 11.025'	Westover	Charles City	Major Fishery DGIF Fishing Guide 2001, Spatial Distribution
W-I09R	54	2	2-JKS000.38	Jackson River Rt. 727 Iron Gate	N37° 47.300'	W79° 46.867'	Clifton Forge	Clifton Forge City	Spatial Distribution

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W-I09R	55	1	2-JKS022.50	Jackson River near Covington	N37° 47.385'	W80° 00.081'	Callagham	Covington City	97 PAH elevated in sediment, '95 PCB, Total Chlordane, DDE, DDT elevated in sediment & PCB above SV in Carp
W-I03L	56	2	2-JKS047.06	Lake Moomaw	N37° 57.235'	W79° 57.865'	Falling Spring	Bath	Majory Fishery. 'Last sample in 01 no problems observed
T-G11E	57	1	2-JMS013.10	James River near Rt. 17	N36° 59.224'	W76° 27.077'	Newport News South	Newport News City	01 Pb in Bluefish, Hg elevated in sediment, '96 PCB slightly above SV. Be As in sediment Tingler Bull 583, 1990,p.M2-5, I-13
T-G11E	58	1	2-JMS021.04	James River near Buoy 12	N37° 03.140'	W76° 34.350'	Mulberry Island	Newport News City	01 As & Pb detected in Blue Crab, Methoxychlor in Fish and Sediment Tingler Bull 583, 1990,p.O3-7
T-G10E	59	1	2-JMS040.03	James River Off southern tip of Jamestown Island	N37° 11.126'	W76° 45.260'	James City	Surry	Spatial Distribution
P-G04E	60	1	2-JMS057.69	James River near Bachelor Point, Buoy 74A	N37° 17.916'	W76° 59.550'	Brandon	Charles City	Spatial Distribution
P-G03E	61	1	2-JMS074.44	James River near Jordan Point, Rt. 156	N37° 19.023'	W77° 13.417'	Westover	Prince George	95 & '97 PCB well above SV for multiple sp.'01 As & Hg detected in Blue catfish near this site.Pb,Cu, DDT,Hg,Pb,PCB detected in fish and sediment near this site Tingler Bull 583, 1990,p.I-13, M4-16 I-14, M6-17, O3-10, M3-31, M4-20, O4-16
P-G02E	62	1	2-JMS091.00	James River Off Deep Bottom Landing	N37° 24.383'	W77° 18.333'	Dutch Gap	Henrico	Spatial Distribution

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P-H39R	63	1	2-JMS110.00	James River near I-95 bridge	N37° 31.671'	W77° 25.859'	Richmond	Richmond City	01 PCB above SV for multiple sp.
P-H39R	64	1	2-JMS118.99	James River near Rt. 150 downstream Bosher Dam	N37° 33.541'	W77° 34.345'	Bon Air	Henrico	Spatial Distribution
P-H39R	65	1	2-JMS127.50	James River at Rt. 652 end, Watkins Landing	N37° 35.300'	W77° 42.800'	Midlothian	Powhatan	Spatial Distribution
P-H33R	66	1	2-JMS157.28	James River near Rt. 45 bridge	N37° 40.233'	W78° 05.215'	Cartersville	Cumberland	01 Carp above PCB SV, As and Hg detected in Carp, Cd, Pbdetected Fish & Sediment Tingler Bull 583, 1990,p.I-14,M5-14, M4-20
P-H20R	67	1	2-JMS176.63	James River near DGIF Boat Ramp downstream of Rt. 15	N37° 42.750'	W78° 18.133'	Arvonia	Buckingham	Spatial Distribution
V-H14R	68	1	2-JMS212.20	James River near Boat Ramp at State Widlife Management Area near Wingina	N37° 40.159'	W78° 42.828'	Howardsville	Nelson	Spatial Distribution
W-H03R	69	1	2-JMS258.54	James River near Rt. 29 bridge	N37° 24.701'	W79° 07.961'	Lynchburg	Lynchburg City	01 PCB above SV for multiple sp., Cd, Chlordane, PCB detected in fish and sediment Tingler Bull 583, 1990,p.I-14,O2-8,O4-17
W-H01R	70	1	2-JMS282.28	James River near Rt. 501 bridge SE of Glasgow	N37° 35.472'	W79° 22.857'	Snowden	Amherst	Spatial Distribution
V-I27R	71	1	2-JMS309.13	James River near Rt. 11 bridge at Buchanan	N37° 31.813'	W79° 40.657'	Buchanan	Botetourt	Spatial Distribution
T-G15E	72	1	2-LAF003.00	Lafayette River near Rt. 460, Elizabeth River	N36° 53.386'	W76° 16.968'	Norfolk South	Norfolk	01 PCB above SV for multiple sp.

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P-J11L	73	1	2-LDJ000.62	Nottoway Lake	N37° 10.000'	W77° 59.000'	Wellville	Nottoway	Spatial Distribution
P-GO8E	74	2	2-LTL001.20	Little Creek Reservoir	N37° 21.083'	W76° 50.483'	Norge	James City	Spatial Distribution
V-I37R	75	1	2-MRY011.23	Maury River	N37° 43.583'	W79° 22.959'	Glasgow	Rockbridge	01 PCB above SV for multiple sp.
V-I35R	76	1	2-MRY020.82	Maury River at the Chessie Trial Park upstream Rt. 39	N37° 47.550'	W79° 29 .767'	Lexington	Lexington City	Spatial Distribution
T-G11E	77	1	2-PGN006.03	Pagan River near Rt. 10	N36° 59.270'	W76° 38.328'	Smithfield	Isle of Wright	01 PCB above SV for Spot and Gizzard Shad
V-H10R	78	2	2-PNY003.06	Piney River near Rt. 674	N37° 42.083'	W78° 59.818'	Arrington	Amherst	Spatial Distribution
P-J15E	79	1	2-PTH000.23	Poythress Creek	N37° 18.477'	W77° 16.291'	Hopewell	Hopewell City	97 PCB well above ER-M and Chlordane DDT, DDD above ER-L
T-G15E	80	1	2-SBE006.00	Southern Branch Elizabeth River	N36° 45.918'	W76° 17.917'	Norfolk South	Chesapeake City	98 PCB in Gizzard Shad above SV
P-J03L	81	1	2-SDY004.27	Sandy River Reservoir near Dam Marrowbone Creek	N37° 15.533'	W78° 19.067'	Rice	Prince Edward	Spatial Distribution
P-J03L	82	1	2-SDY011.08	Prince Edward Lake at Twin Lake State Park	N37° 10.498'	W78° 16.515'	Green Bay	Prince Edward	Spatial Distribution
P-J17L	83	2	2-SFT006.10	Swift Creek Reservoir near Dam	N37° 16.250'	W77° 25.267'	Chester	Chesterfield	Spatial Distribution
W-H12L	84	2	2-SHS001.00	Stonehouse Lake	N37° 40.367'	W79° 07.200'	Piney River	Amherst	Major Fishery DGIF Fishing Guide 2001, Spatial Distribution
T-G15E	85	1	2-STJ000.81	St. Julian Creek	N36° 46.968'	W76° 19.290'	Norfolk South	Chesapeake City	01 PCB in Striped Bass & Gizzard Shad above SV & DDT in Gizzard shad above SV
T-G15E	86	1	2-WBE002.11	Western Branch Elizabeth River near Rt. 17 bridge on Churchland Rd	N36° 50.592'	W76° 21.758'	Norfolk South	Portsmouth City	93 & '01 PCB above SV for multiple fish sp. And blue crab

Table 3. 2005 Fish Tissue and Sediment Monitoring Stations

WBID	Site #	Priority	DEQ Rivermile	Stream name	Latitude	Longitude	Topo Quad Name	County/City	Problem/Reference
T-G15E	87	1	2-WBE006.18	Western Branch Elizabeth River	N36° 48.297'	W76° 24.145'	Bowers Hill	Chesapeake City	01 PCB exceed SV for multiple sp.
T-G15E	88	1	2-WLY001.37	Willoughby Bay	N36° 57.402'	W76° 17.318'	Norfolk North	Norfolk City	01 PCB exceed SV for Spot. '98 As detected in Blue Crab
T-G11E	89	1	2-WWK012.41	Newport News Reservoir/Lee Hall Reservoir at Rt. 143 bridge (Warwick Creek)	N37° 11.132'	W76° 33.396'	Yorktown	Newport News City	01 Hg elevated in Sediment, '02 Hg Elevated in Sediment Cu in fish and sediment Tingler Bull 583, 1990,p.M6-25,O2-8 in Warwick Creek downstream of site
P-J07L	90	1	2-XLW000.60	Amelia Lake	N37° 28.217'	W77° 55.283'	Chula	Amelia	Spatial Distribution
HOLSTON RIVER BASIN									
S-O13R	91	1	6CNFH008.80	North Fork Holston River nea Rt. 23 bridge, Weber City	N36° 36.530'	W82° 34.113'	Kingsport	Scott	Special Request M Richards TMDL
S-O12R	92	1	6CNFH039.18	North Fork Holston River nea Mendota	N36° 42.078'	W82° 18.435'	Mendota	Washington	Special Request M Richards TMDL
S-O11R	93	1	6CNFH078.55	North Fork Holston River downstream Saltville	N36° 52.068'	W81° 50.063'	Gladspring	Washington	Special Request M Richards TMDL
YORK RIVER BASIN									
N-F22L	94	1	8-CAM001.00	Bowles Pond (Campbell Creek)	N38° 05.784'	W77° 22.741'	Woodford	Caroline	Request from Fort AP Hill, Hg in tissue

Figure 1. Potomac River Basin (1"= 16 Miles)

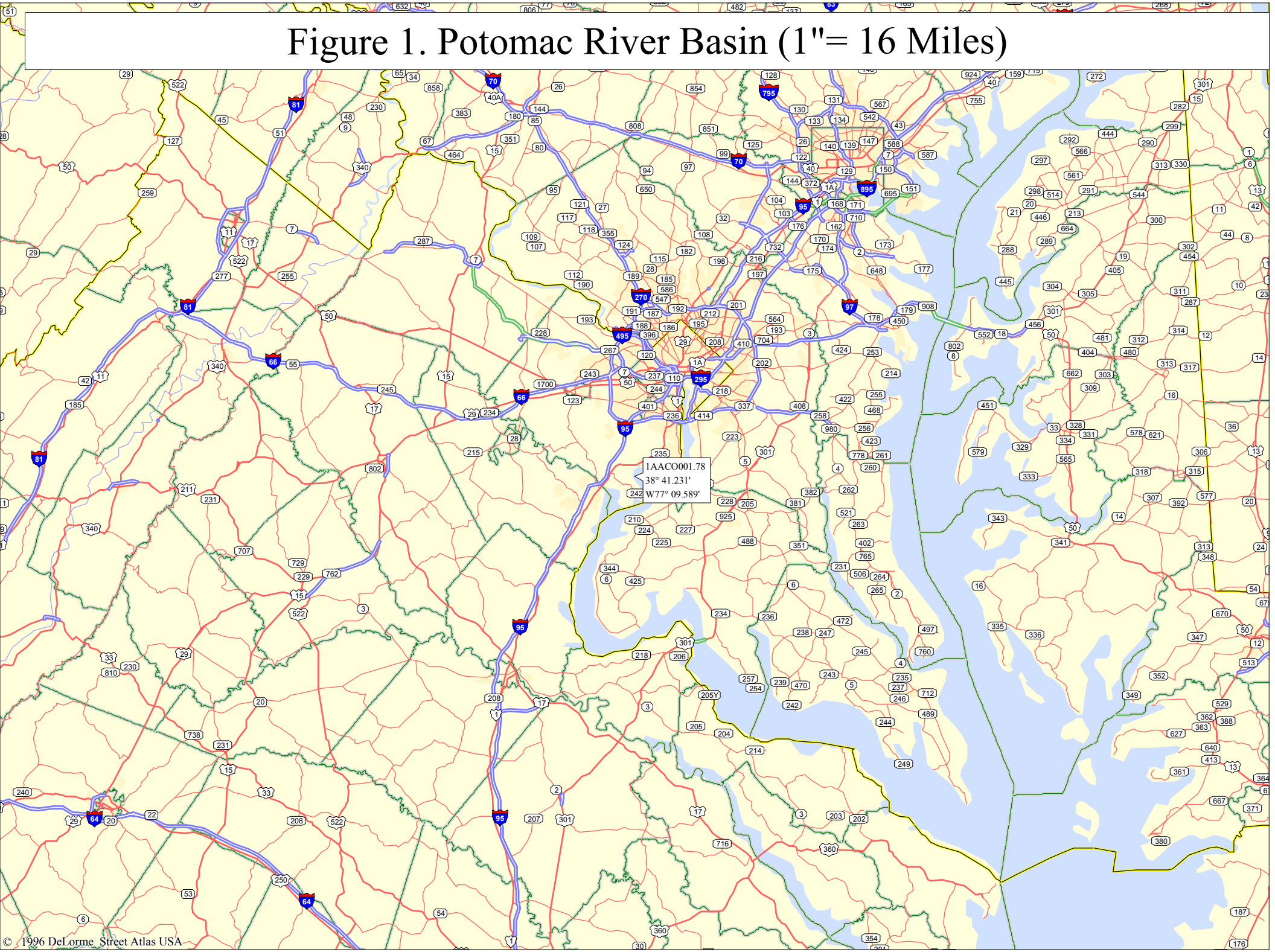


Figure 2 Shenandoah River Basin Sites (1"=16 Miles)

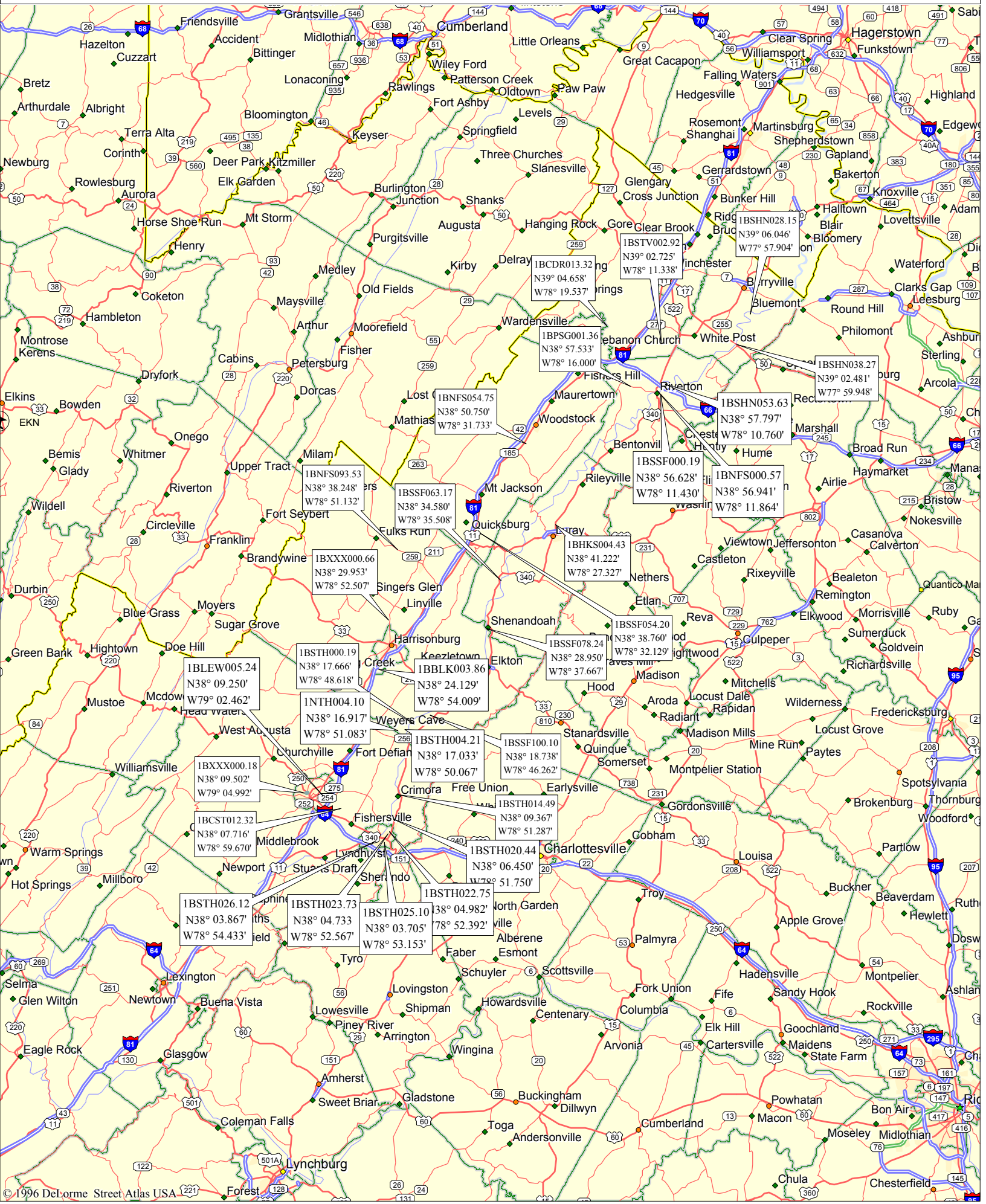
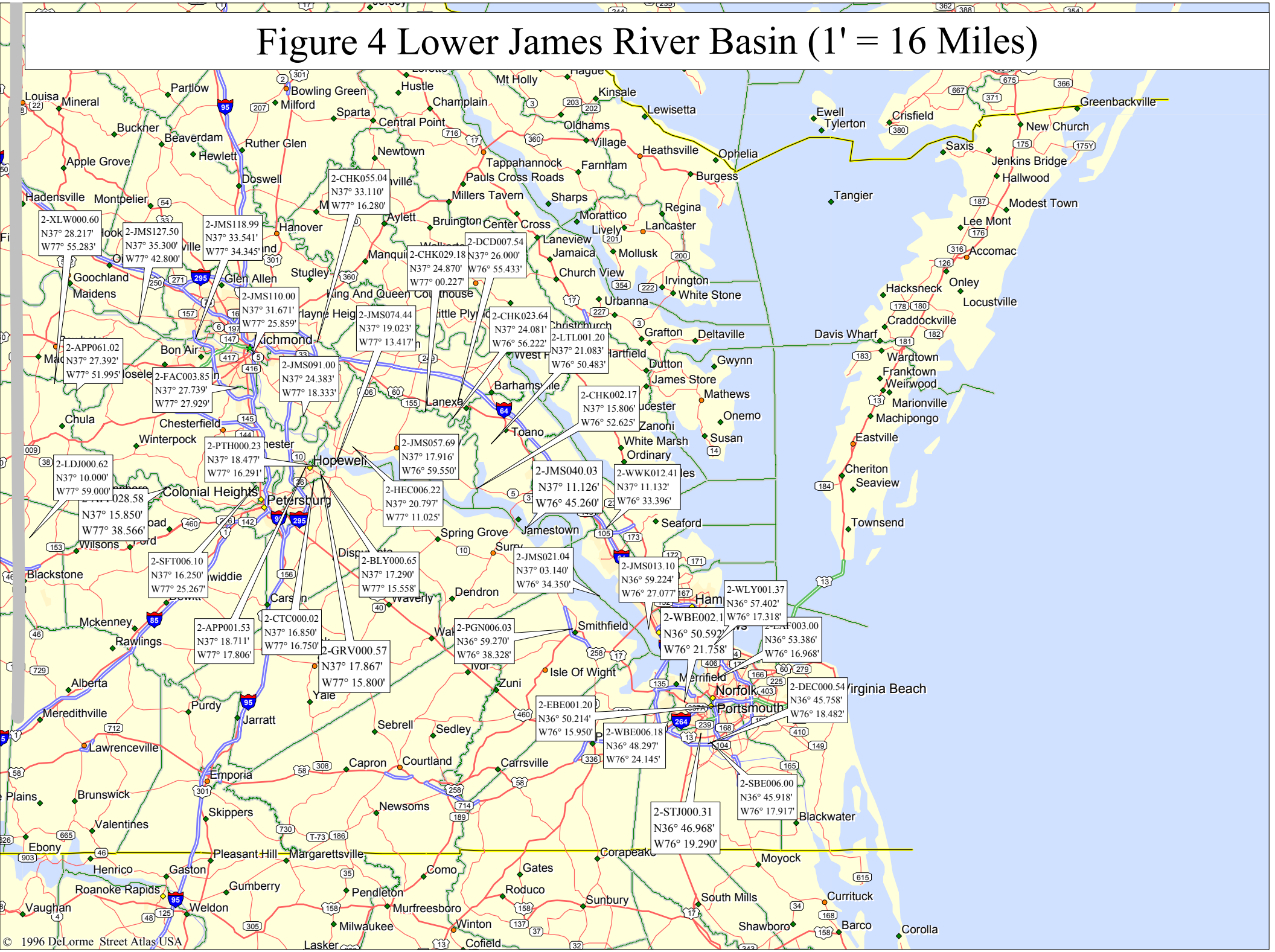


Figure 3 Upper James River Basin (1' = 16 Miles)

Figure 4 Lower James River Basin (1' = 16 Miles)



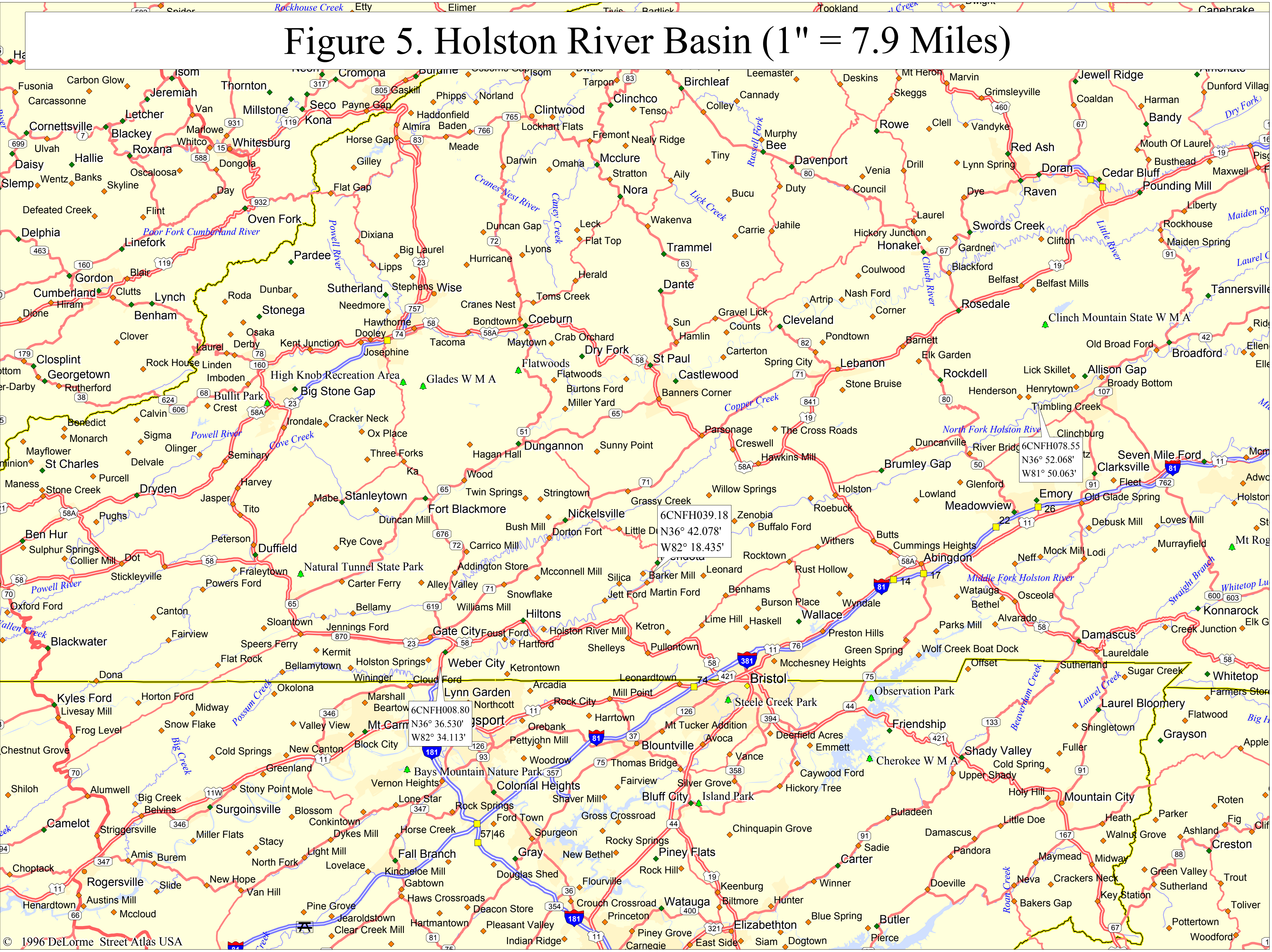
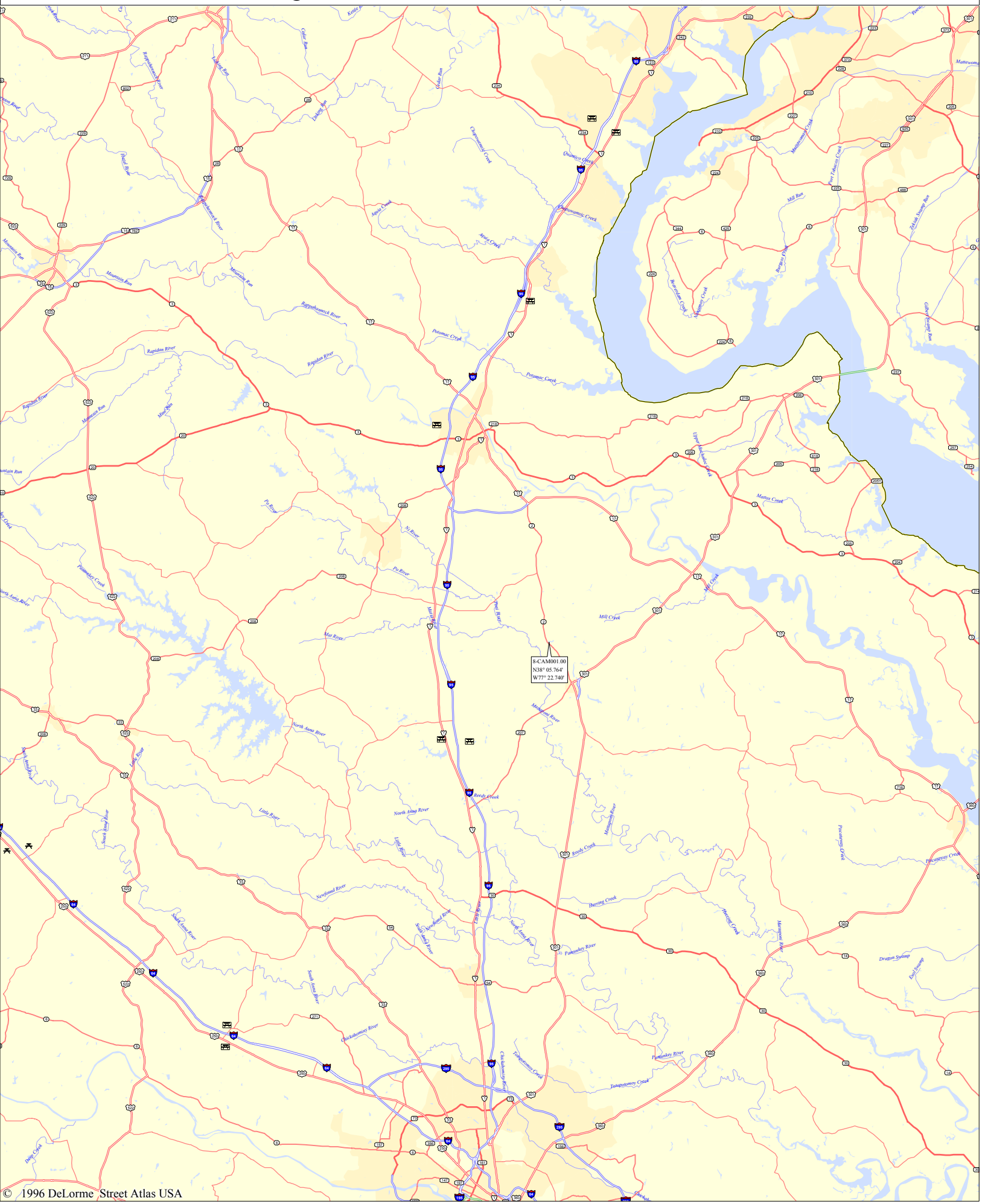


Figure 5. Holston River Basin (1" = 7.9 Miles)

Figure 6. York River Basin (1"= 7.9 Miles)



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